

the palm area of the glove. It should also be understood that the cut resistance was measured in accordance with the CRF test procedure to ASTM STP 1273.

TABLE V

Sample	1	2
Fiber	—	glass fiber
Fiber Content (wt %)	0	7
Density of film (g/m <sup>2</sup> )	270	300
Cut Resistance (g)	100	200

## EXAMPLE 6

Using the polyurea polymer as prepared in Example 1, several different types of fibers were used and made into a film. Table VI, hereinbelow, sets forth the types of fiber employed in each Example. It is here noted that the cut resistance was measured in inches employing a force of 150 grams. The values represent the distance a fresh blade traveled before the material was cut.

TABLE VI

Ex-ample	Fiber	Fiber Content (wt %)	Cut Resistance (inch)	Density g/m <sup>2</sup>
1	0	0	0.50	160
2	CRF ®	5.3	1.02	190
3	Kevlar ®	8.3	0.62	160
4	Spectra ®	6.4	0.71	180
5	Milled 1/16" Glass	5.5	1.05	170

Thus it should be evident that the gloves and/or elastomeric films of the present invention have improved cut resistance without deleteriously impacting many of the properties of the gloves or films. The invention is particularly suited for medical and industrial uses, but is not necessarily limited thereto. Namely, it is anticipated that many molded or extruded products or films can be advantageously enhanced using the teachings of the present invention.

Based upon the foregoing disclosure, it should now be apparent that the use of the gloves and/or films described herein will carry out the objects set forth hereinabove. It is, therefore, to be understood that any variations evident fall within the scope of the claimed invention and thus, the selection of specific component elements can be determined without departing from the spirit of the invention herein disclosed and described. In particular, gloves according to the present invention are not necessarily limited to those made by dip-forming because it is anticipated that similar gloves may be formed by flocking processes. Thus, the scope of the invention shall include all modifications and variations that may fall within the scope of the attached claims.

What is claimed is:

- 1. A medical glove having improved cut resistance comprising:

at least three dipped formed elastomeric layers combined to form the entire glove, the at least three elastomeric layers including an innermost layer, an outermost layer, and a middle layer, wherein the middle layer contains a three dimensional network of chopped fibers randomly dispersed throughout for enhancing the glove's cut resistance.

2. A medical glove, as set forth in claim 1, where said fibers for enhancing the glove's cut resistance are selected

from the group consisting of glass fibers, steel fibers, aramid fibers, polyethylene fibers, particle filled polymeric fibers and mixtures thereof.

3. A medical glove, as set forth in claim 2, wherein said fibers are particle filled polymeric fibers.

4. A medical glove, as set forth in claim 2, wherein said fibers are ultra high molecular weight polyethylene fibers.

5. A medical glove, as set forth in claim 1, wherein at least one layer of said at least three elastomeric layers comprises a polymer selected from the group consisting of natural rubber, polychloroprene, styrene-isoprene-styrene block copolymers, styrene-ethylene butylene-styrene block copolymers, styrene-butadiene-styrene block copolymers, polyurethane, polyurea, nitrile rubber, vinyl chloride based polymers and mixtures thereof.

6. A medical glove, as set forth in claim 5, wherein said polymer is natural latex.

7. A medical glove, as set forth in claim 5, wherein said polymer is a mixture of styrene-isoprene-styrene and styrene-ethylene butylene-styrene block copolymers.

8. A medical glove, as set forth in claim 1, wherein said glove's cut resistance is increased by at least about 20 percent by the addition of about 2 to about 20 weight percent of said fibers.

9. A medical glove, as set forth in claim 1, wherein said at least three elastomeric layers comprises a polymer that is a mixture of styrene-butadiene-styrene and styrene-isoprene-styrene block copolymers.

10. A medical glove, as set forth in claim 1, wherein said glove contains from about 2 to about 20 percent fiber based on the entire weight of the glove.

11. A medical glove, as set forth in claim 1, wherein said at least three elastomeric layers define a single layer palm thickness of the glove from about 0.08 to about 0.4 mm, a single layer finger thickness from about 0.08 to about 0.45 mm, and a single layer cuff thickness of the glove from about 0.08 to about 0.2 mm.

12. A medical glove, as set forth in claim 1, wherein the tensile strength of the glove is at least about 17 MPa, the elongation of the glove is at least about 650 percent, and the 500% modulus of the glove is less than about 7 MPa.

13. A medical glove, as set forth in claim 1, wherein the tensile strength of the glove is at least about 24 MPa, the

elongation of the glove is at least about 750 percent, and the 500% modulus of the glove is less than about 5.5 MPa.

14. A glove, as set forth in claim 1, where said fibers have a length of from about 0.1 mm to about 5.0 mm.

15. A medical glove, as set forth in claim 1, where said fibers have a denier that is from about 1 to about 10.

16. A glove having increased cut resistance comprising:  
at least one polymeric layer, wherein the at least one polymeric layer includes chopped fibers that are randomly dispersed therein thus forming a glove having cut and puncture resistance throughout.

17. A glove, as set forth in claim 16, wherein said polymeric layer comprises a polymer selected from the group consisting of natural rubber, polychloroprene, styrene-isoprene-styrene block copolymers, styrene-butadiene-styrene block copolymers, styrene-ethylene butylene-styrene block copolymers, polyurethane, polyurea, nitrile rubber, vinyl chloride based polymers, and mixtures thereof.

18. A glove, as set forth in claim 16, wherein said fibers are selected from the group consisting of glass fibers, steel fibers, aramid fibers, polyethylene fibers, particle filled polymeric fibers, and mixtures thereof.

19. A glove, as set forth in claim 16, where a single layer palm thickness of the glove is from about 0.08 to about 0.2 mm.

20. A medical glove having improved cut resistance comprising an innermost layer, an outermost layer, and a middle layer therebetween, where the middle layer extends throughout the entire glove and includes a three dimensional network of chopped fibers randomly dispersed throughout for enhancing the cut resistance of the glove.

21. A medical glove, as set forth in claim 20, wherein each of the plurality of chopped fibers has a thickness dimension ranging from about 0.1 mm to about 0.2 mm and includes a length dimension from about 0.1 mm to about 5 mm.

22. A medical glove, as set forth in claim 20, wherein each of the plurality of chopped fibers has a denier ranging from about 1 to about 10.

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23. A Polymeric film having increased cut resistance comprising:  
at least one polymeric layer, wherein the at least one polymeric layer  
includes chopped fibers that are randomly dispersed therein thus forming a  
polymeric film having cut and puncture resistance throughout.
24. A polymeric film, as set forth in claim 23, wherein said polymeric layer comprises  
a polymer selected from the group consisting of natural rubber, polychloroprene,  
styrene-isoprene-styrene block copolymers, styrene-butadiene-styrene block  
copolymers, styrene-ethylene butylene-styrene block copolymers, polyurethane,  
polyurea, nitrile rubber, vinyl chloride based polymers, and mixtures thereof.
25. A polymeric film, as set forth in claim 23, wherein said fibers are selected from  
the group consisting of glass fibers, steel fibers, aramid fibers, polyethylene fibers,  
particle filled polymeric fibers, and mixtures thereof.
26. A polymeric film, as set forth in claim 23, wherein said fibers are particle filled  
polymeric fibers.
27. A polymeric film, as set forth in claim 23, wherein the polymeric film's cut  
resistance is increased by at least about 20 percent by the addition of about 2 to  
about 20 weight percent of said fibers.
28. A polymeric film, as set forth in claim 23, wherein the tensile strength of the  
polymeric film is at least about 17 MPa, the elongation of the polymeric film  
is at least about 650 percent, and 500% modulus of the polymer film is less than  
about 7 MPa.
29. A polymeric film, as set forth in claim 23, wherein the tensile strength of the

polymeric film is at least about 24<sup>✓</sup> MPa, the elongation of the polymeric film is at least about 750 percent, and the 500% modulus of the polymeric film is less than about 5.5 MPa.

30. A polymeric film, as set forth in claim 23, wherein each of the said chopped fibers has a denier ranging from about 1 to about 10.
31. A polymeric film, as set forth in claim 23, wherein said chopped fibers have a length of from about 0.1 mm to about 5.0 mm.
32. An article formed from a polymeric film having increased cut resistance, said polymeric film comprising:  
at least one polymeric layer, wherein the at least one polymeric layer includes chopped fibers that are randomly dispersed therein to form a polymeric film having cut and puncture resistance throughout.
33. An article, as set forth in claim 32, wherein said polymeric layer comprises a polymer selected from the group consisting of natural rubber, polychloroprene, styrene-isoprene-styrene block copolymer, styrene-butadiene-styrene block copolymers, styrene-ethylene butylene-styrene block copolymers, polyurethane, polyurea, nitrile rubber, vinyl chloride based polymers, and mixtures thereof.
34. An article, as set forth in claim 32, wherein said fibers are selected from the group consisting of glass fibers, steel fibers, aramid fibers, polyethylene fibers, particle filled polymeric fibers, and mixtures thereof.